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NOTICES

PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.

If there is a journal you feel I should be tracking on a regular basis, do let me know.

And if you have any other ideas for extending the “EAORC experience”, please contact me.

EAORC NEWS – Replacing the Membership Page on the Website

The new membership page is now live. If you wish to add a comment, just send me a few kind words about EAORC and I'll include them.

You can add a comment no matter how you receive the bulletin – first-hand by email every Sunday, by copied email, by ResearchGate notification, or any way you access the bulletin.

Many thanks in anticipation, and especial thanks to those who have already responded.

Martin

NEWS

BREAKING SCIENCE – Giraffes are Socially Complex Animals, Says New Review

Giraffes (*Giraffa camelopardalis*) exhibit many of the features typical of mammals with complex cooperative social systems and matrilineal societies, according to a review paper published in the journal *Mammal Review*. Giraffes are the tallest living terrestrial animals, the largest extant ruminants, and conspicuous members of the African fauna.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/4_UeifJkmhQ/socially-complex-giraffes-09924.html

SAPIENS – Human Origins

A newly analyzed skull from northeastern China may signal a species that had closer ties to us than Neanderthals.

<https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=52c779d452&e=dc0eff6180>

SCIENCE DAILY – Neanderthals indeed painted Andalusia's Cueva de Ardales

The origin and date of appearance of prehistoric cave art are the subjects of ongoing debate. Spain's Cueva de Ardales is one point of discussion. There a flowstone formation is stained red in places. This coloring is apparently almost 65,000 years old but until now, a part of the scientific community attributed it to a natural coating of iron oxide deposited by flowing water. However, that hypothesis has just been rejected.

<https://www.sciencedaily.com/releases/2021/08/210802160624.htm>

PUBLICATIONS

American Journal of Physical Anthropology

PAPERS

ANNA JURAS et al – Maternal genetic origin of the late and final Neolithic human populations from present-day Poland

We conducted ancient DNA studies from populations associated with Złota, Globular Amphora, Funnel Beaker, and Corded Ware cultures (CWC). We sequenced genomic libraries on Illumina platform to generate 86 complete ancient mitochondrial genomes. Some of the samples were enriched for mitochondrial DNA using hybridization capture.

The maternal genetic composition found in Złota-associated individuals resembled that found in people associated with the Globular Amphora culture which indicates that both groups likely originated from the same maternal genetic background. Further, these two groups were closely related to the Funnel Beaker culture-associated population. None of these groups shared a close affinity to CWC-associated people. Haplogroup U4 was present only in the CWC group and absent in Złota group, Globular Amphora, and Funnel Beaker cultures.

The prevalence of mitochondrial haplogroups of Neolithic farmer origin identified in Early, Middle and Late Neolithic populations suggests a genetic continuity of these maternal lineages in the studied area. Although overlapping in time – and to some extent – in cultural expressions, none of the studied groups (Złota, Globular Amphora, Funnel Beaker), shared a close genetic affinity to CWC-associated people, indicating a larger extent of cultural influence from the Pontic steppe than genetic exchange. The higher frequency of haplogroup U5b found in populations associated with Funnel Beaker, Globular Amphora, and Złota cultures suggest a gradual maternal genetic influx from Mesolithic hunter-gatherers. Moreover, presence of haplogroup U4 in Corded Ware groups is most likely associated with the migrations from the Pontic steppe at the end of the Neolithic and supports the observed genetic distances.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24372>

eLife

PAPERS

AURELIO CORTESE et al – Value signals guide abstraction during learning

The human brain excels at constructing and using abstractions, such as rules, or concepts. Here, in two fMRI experiments, we demonstrate a mechanism of abstraction built upon the valuation of sensory features. Human volunteers learned novel association rules based on simple visual features. Reinforcement-learning algorithms revealed that, with learning, high-value abstract representations increasingly guided participant behaviour, resulting in better choices and higher subjective confidence. We also found that the brain area computing value signals – the ventromedial prefrontal cortex – prioritised and selected latent task elements during abstraction, both locally and through its connection to the visual cortex. Such a coding scheme predicts a causal role for valuation. Hence, in a second experiment, we used multivoxel neural reinforcement to test for the causality of feature valuation in the sensory cortex, as a mechanism of abstraction. Tagging the neural representation of a task feature with rewards evoked abstraction-based decisions. Together, these findings provide a novel interpretation of value as a goal-dependent, key factor in forging abstract representations.

<https://elifesciences.org/articles/68943>

Frontiers in Ecology and Evolution

ARTICLES

LAURA VERGA & ANDREA RAVIGNANI – Strange Seal Sounds: Claps, Slaps, and Multimodal Pinniped Rhythms

Within mammalian bioacoustics, vocal communication has received much attention. Efforts to understand sound production often focus on sounds generated via apparatuses that specifically evolved to phonate, such as the larynx. However, while mammals mostly perceive sounds via one organ, the ear, they can produce sounds via limbs, tails, flippers, tools, and several other mechanisms which, at first, may not seem to have primarily evolved for sonation (Tyack and Miller, 2002; Frankel, 2009; Clark, 2016). For example, kangaroo rats drum their foot to communicate (Randall, 1984), while non-human primates drum using artificial tools (Remedios et al., 2009), resonant surfaces (Ravignani et al., 2013), and their hands (e.g., Dufour et al., 2015). Also aquatic mammals can produce a variety of non-vocal sounds (such as whistles, snorts, and others; Tyack and Miller, 2002). These sound production modes may enable communication even when laryngeal phonation is ineffective or impaired (Munoz and Blumstein, 2012; Partan, 2017). Research on sound production beyond phonation is key to properly characterise the richness of animal communication.

<https://www.frontiersin.org/articles/10.3389/fevo.2021.644497/full>

PAPERS

JENNIFER E. SMITH et al with MARK VAN VUGT – An Evolutionary Explanation for the Female Leadership Paradox

Social influence is distributed unequally between males and females in many mammalian societies. In human societies, gender inequality is particularly evident in access to leadership positions. Understanding why women historically and cross-culturally have tended to be under-represented as leaders within human groups and organizations represents a paradox because we lack evidence that women leaders consistently perform worse than men. We also know that women exercise overt influence in collective group-decisions within small-scale human societies, and that female leadership is pervasive in particular contexts across non-human mammalian societies. Here, we offer a transdisciplinary perspective on this female leadership paradox. Synthesis of social science and biological literatures suggests that females and males, on average, differ in why and how they compete for access to political leadership in mixed-gender groups. These differences are influenced by sexual selection and are moderated by socioecological variation across development and, particularly in human societies, by culturally transmitted norms and institutions. The interplay of these forces contributes to the emergence of female leaders within and across species. Furthermore, females may regularly exercise influence on group decisions in less conspicuous ways and different domains than males, and these underappreciated forms of leadership require more study. We offer a comprehensive framework for studying inequality between females and males in access to leadership positions, and we discuss the implications of this approach for understanding the female leadership paradox and for redressing gender inequality in leadership in humans.

<https://www.frontiersin.org/articles/10.3389/fevo.2021.676805/full>

MARC VORSATZ, SANTIAGO SANCHEZ-PAGES & ENRIQUE TURIEGANO – Masculinity and Lying

Dishonesty in communication has important economic implications. The standing literature has shown that lying is less pervasive than predicted by standard economic theory. We explore whether biology can help to explain this behavior. In a sample of men, we study whether masculine traits are related to (dis)honesty in a sender-receiver game. We study three masculine physical traits: the second-to-fourth digit ratio, facial morphometric masculinity and the facial width-to-height ratio. These biomarkers display significant associations with lying and deception in the game. We also explore the extent to which these effects operate through social preferences or through beliefs about the behavior of receivers.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.684226/full>

BERNHARD HOMMEL – The Me-File: An Event-Coding Approach to Self-Representation

Numerous authors have taken it for granted that people represent themselves or even have something like “a self”, but the underlying mechanisms remain a mystery. How do people represent themselves? Here I propose that they do so not any differently from how they represent other individuals, events, and objects: by binding codes representing the sensory consequences of being oneself into a Me-File, that is, into an event file integrating all the codes resulting from the behaving me. This amounts to a Humean bundle-self theory of selfhood, and I will explain how recent extensions of the Theory of Event Coding, a general theory of human perception and action control, provide all the necessary ingredients for specifying the mechanisms underlying such a theory. The Me-File concept is likely to provide a useful mechanistic basis for more specific and more theoretically productive experimentation, as well as for the construction of artificial agents with human-like selves.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.698778/full>

PAWEŁ URBANIK & JAN SVENNEVIG – Action-Depicting Gestures and Morphosyntax: The Function of Gesture-Speech Alignment in the Conversational Turn

The current study examines the role of action-depicting gestures in conversational turns by focusing on their semantic characteristics and temporal position in relation to their verbal affiliates (action verbs or more complex verb phrases). The data are video recordings of naturally occurring interactions in multilingual construction sites in Norway. The analysis distinguishes two modes of action depiction: generic depictions, which represent the action as a general type, and contextualized depictions, which in addition include deictic references to the spatio-material environment or iconic representations of the specific manner of action performance. These two modes typically occupy different positions in the turn. Generic depictions are mostly initiated before the verbalization of the action or are synchronized with it, while contextualized depictions mostly start simultaneously with the verbalization and extend beyond the verb phrase or the turn. The pre-positioned and synchronized generic gestures are shown to serve as a practice for facilitating recognition of the verbalized action and may be temporally manipulated in order to pre-empt understanding problems in the face of reduced common linguistic resources. The post-positioned contextualized depictions serve instead to add specifying information about aspects of the action referred to and thereby to complement or supplement the meaning of the verb phrase, securing understanding of action specifics. The study contributes to research on gesture-speech synchrony by demonstrating how variation in the alignment of action depiction and syntax is used to direct the recipient’s attention toward different interactional goals.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.689292/full>

ORNOB ALAM – Cultural and genetic interplay

The extent to which culture interacts with genetics is of great interest in understanding human demographic and evolutionary changes over time. López et al. have examined genetic variation in >1,200 Ethiopian individuals belonging to 68 different ethnic groups, and found correlations of genetic distance with language, geographic distance, reported ethnicity and cultural practices, such as wearing lip plates. Although determining causal relationships between correlated genetic and cultural factors can be difficult, estimating the timing of demographic events, such as population splits, alongside archaeological data can provide useful insights. For example, the authors found genetic evidence across different communities of recent isolation along occupational lines. Socially marginalized occupational groups, such as cultivators or weavers, probably diverged from different occupational groups, such as blacksmiths and tanners, ~4,200 years ago, a time corresponding to the start of ironworking in Ethiopia.

<https://www.nature.com/articles/s41588-021-00915-x>

Nature Humanities & Social Sciences Communications

PAPERS

BAHATA ANSUMALI MUKHOPADHYAY – Ancestral Dravidian languages in Indus Civilization: ultraconserved Dravidian tooth-word reveals deep linguistic ancestry and supports genetics

Ever since the discovery of Indus valley civilization, scholars have debated the linguistic identities of its people. This study analyzes numerous archaeological, linguistic, archaeogenetic and historical evidences to claim that the words used for elephant (like, 'pīri', 'pīru') in Bronze Age Mesopotamia, the elephant-word used in the Hurrian part of an Amarna letter of ca. 1400 BC, and the ivory-word ('pīruš') recorded in certain sixth century BC Old Persian documents, were all originally borrowed from 'pīlu', a Proto-Dravidian elephant-word, which was prevalent in the Indus valley civilization, and was etymologically related to the Proto-Dravidian tooth-word '*pal' and its alternate forms ('*pāl'/'*pāl'/'*pel'). This paper argues that there is sufficient morphophonemic evidence of an ancient Dravidian '*pāl'/'*pāl'-based root, which meant 'splitting/crushing', and was semantically related to the meanings 'tooth/tusk'. This paper further observes that 'pīlu' is among the most ancient and common phytonyms of the toothbrush tree *Salvadora persica*, which is a characteristic flora of Indus valley, and whose roots and twigs have been widely used as toothbrush in IVC regions since antiquity. This study claims that this phytonym 'pīlu' had also originated from the same Proto-Dravidian tooth-word, and argues that since IVC people had named their toothbrush trees and tuskers (elephants) using a Proto-Dravidian tooth-word, and since these names were widely used across IVC regions, a significant population of Indus valley civilization must have used that Proto-Dravidian tooth-word in their daily communication. Since 'tooth' belongs to the core non-borrowable ultraconserved vocabulary of a speech community, its corollary is that a significant population of IVC spoke certain ancestral Dravidian languages. Important insights from recent archaeogenetic studies regarding possible migration of Proto-Dravidian speakers from Indus valley to South India also corroborate the findings of this paper.

<https://www.nature.com/articles/s41599-021-00868-w>

Nature Neuroscience

PAPERS

TODD M. PREUSS & STEVEN P. WISE – Evolution of prefrontal cortex

Subdivisions of the prefrontal cortex (PFC) evolved at different times. Agranular parts of the PFC emerged in early mammals, and rodents, primates, and other modern mammals share them by inheritance. These are limbic areas and include the agranular orbital cortex and agranular medial frontal cortex (areas 24, 32, and 25). Rodent research provides valuable insights into the structure, functions, and development of these shared areas, but it contributes less to parts of the PFC that are specific to primates, namely, the granular, isocortical PFC that dominates the frontal lobe in humans. The first granular PFC areas evolved either in early primates or in the last common ancestor of primates and tree shrews. Additional granular PFC areas emerged in the primate stem lineage, as represented by modern strepsirrhines. Other granular PFC areas evolved in simians, the group that includes apes, humans, and monkeys. In general, PFC accreted new areas along a roughly posterior to anterior trajectory during primate evolution. A major expansion of the granular PFC occurred in humans in concert with other association areas, with modifications of corticocortical connectivity and gene expression, although current evidence does not support the addition of a large number of new, human-specific PFC areas.

<https://www.nature.com/articles/s41386-021-01076-5>

Nature Scientific Reports

PAPERS

Y. ZÜRCHER, E. P. WILLEMS & J. M. BURKART – Trade-offs between vocal accommodation and individual recognisability in common marmoset vocalizations

Recent studies find increasing evidence for vocal accommodation in nonhuman primates, indicating that this form of vocal learning is more prevalent than previously thought. Convergent vocal accommodation (i.e. becoming more similar to partners) indicates social closeness. At the same time, however, becoming too similar may compromise individual recognisability. This is especially problematic if individual recognisability is an important part of the call function, like in long-distance contact calls. In contrast, in calls with a different function, the trade-off between signalling social closeness and individual recognisability might be less severe. We therefore hypothesized that the extent and consequences of accommodation depend on the function of a given call, and expected (1) more accommodation in calls for which individual identity is less crucial and (2) that individual identity is less compromised in calls that serve mainly to transmit identity compared to calls where individual recognisability is less important. We quantified vocal accommodation in three call types over the process of pair formation in common marmoset monkeys (*Callithrix jacchus*, n = 20). These three call types have different functions and vary with the degree to which they refer to individual identity of the caller. In accordance with our predictions, we found that animals converged most in close contact calls (trill calls), but less in calls where individual identity is more essential (phee- and food calls). In two out of three call types, the amount of accommodation was predicted by the initial vocal distance. Moreover, accommodation led to a drop in statistical individual recognisability in trill calls, but not in phee calls and food calls. Overall, our study shows that patterns of vocal accommodation vary between call types with different functions, suggestive of trade-offs between signalling social closeness and individual recognisability in marmoset vocalizations.

New Scientist

NEWS

People happily steal from groups even if they are generous one-on-one

Most people play fair in lab tests where they can share or steal small sums of money – yet in real life, unfairness and cheating is common. Now, the apparent contradiction has a new explanation. In lab experiments where people are able to take money from groups of people, they nearly always do, but the same individuals tend to be fair when dealing with just one other person.

<https://www.newscientist.com/article/2285525-people-happily-steal-from-groups-even-if-they-are-generous-one-on-one/#ixzz72iBWLbJF>

PLoS One

PAPERS

MOHAMMAD SALAHSHOUR – Evolution of prosocial punishment in unstructured and structured populations and in the presence of antisocial punishment

A large body of empirical evidence suggests that altruistic punishment abounds in human societies. Based on such evidence, it is suggested that punishment serves an important role in promoting cooperation in humans and possibly other species. However, as punishment is costly, its evolution is subject to the same problem that it tries to address. To suppress this so-called second-order free-rider problem, known theoretical models on the evolution of punishment resort to one of the few established mechanisms for the evolution of cooperation. This leaves the question of whether altruistic punishment can evolve and give rise to the evolution of cooperation in the absence of such auxiliary cooperation-favoring mechanisms unaddressed. Here, by considering a population of individuals who play a public goods game, followed by a public punishing game, introduced here, we show that altruistic punishment indeed evolves and promotes cooperation in the absence of a cooperation-favoring mechanism. In our model, the punishment pool is considered a public resource whose resources are used for punishment. We show that the evolution of a punishing institution is facilitated when resources in the punishment pool, instead of being wasted, are used to reward punishers when there is nobody to punish. Besides, we show that higher returns to the public resource or punishment pool facilitate the evolution of prosocial instead of antisocial punishment. We also show that an optimal cost of investment in the punishment pool facilitates the evolution of prosocial punishment. Finally, our analysis shows that being close to a physical phase transition facilitates the evolution of altruistic punishment.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0254860>

PNAS

PAPERS

AFRICA PITARCH MARTÍ et al with JOÃO ZILHÃO & FRANCESCO D'ERRICO – The symbolic role of the underground world among Middle Paleolithic Neanderthals

Cueva de Ardales in Málaga, Spain, is one of the richest and best-preserved Paleolithic painted caves of southwestern Europe, containing over a thousand graphic representations. Here, we study the red pigment in panel II.A.3 of “Sala de las Estrellas,” dated by U-Th to the Middle Paleolithic, to determine its composition, verify its anthropogenic nature, infer the associated behaviors, and discuss their implications. Using optical microscopy, scanning electron microscopy coupled with energy dispersive X-ray spectroscopy, micro-Raman spectroscopy, and X-ray diffraction, we analyzed a set of samples from the panel and compared them to natural coloring materials collected from the floor and walls of the cave. The conspicuously different texture and composition of the geological samples indicates that the pigments used in the paintings do not come from the outcrops of colorant material known in the cave. We confirm that the paintings are not the result of natural processes and show that the composition of the paint is consistent with the artistic activity being recurrent. Our results strengthen the hypothesis that Neanderthals symbolically used these paintings and the large stalagmitic dome harboring them over an extended time span.

<https://www.pnas.org/content/118/33/e2021495118>

KATHARINE MACDONALD et al with KRIST VAESEN & WIL ROEBROEKS – Middle Pleistocene fire use: The first signal of widespread cultural diffusion in human evolution

Control of fire is one of the most important technological innovations within the evolution of humankind. The archaeological signal of fire use becomes very visible from around 400,000 y ago onward. Interestingly, this occurs at a geologically similar time over major parts of the Old World, in Africa, as well as in western Eurasia, and in different subpopulations of the wider hominin metapopulation. We interpret this spatiotemporal pattern as the result of cultural diffusion, and as representing the earliest clear-cut case of widespread cultural change resulting from diffusion in human evolution. This fire-use pattern is followed slightly later by a similar spatiotemporal distribution of Levallois technology, at the beginning of the African Middle Stone Age and the western Eurasian Middle Paleolithic. These archaeological data, as well as studies of ancient genomes, lead us to hypothesize that at the latest by 400,000 y ago, hominin subpopulations encountered one another often enough and were sufficiently tolerant toward one another to transmit ideas and techniques over large regions within relatively short

time periods. Furthermore, it is likely that the large-scale social networks necessary to transmit complicated skills were also in place. Most importantly, this suggests a form of cultural behavior significantly more similar to that of extant Homo sapiens than to our great ape relatives.

<https://www.pnas.org/content/118/31/e2101108118.abstract>

GIULIA GENNARI et al with GHISLAINE DEHAENE-LAMBERTZ – Orthogonal neural codes for speech in the infant brain

Creating invariant representations from an everchanging speech signal is a major challenge for the human brain. Such an ability is particularly crucial for preverbal infants who must discover the phonological, lexical, and syntactic regularities of an extremely inconsistent signal in order to acquire language. Within the visual domain, an efficient neural solution to overcome variability consists in factorizing the input into a reduced set of orthogonal components. Here, we asked whether a similar decomposition strategy is used in early speech perception. Using a 256-channel electroencephalographic system, we recorded the neural responses of 3-mo-old infants to 120 natural consonant–vowel syllables with varying acoustic and phonetic profiles. Using multivariate pattern analyses, we show that syllables are factorized into distinct and orthogonal neural codes for consonants and vowels. Concerning consonants, we further demonstrate the existence of two stages of processing. A first phase is characterized by orthogonal and context-invariant neural codes for the dimensions of manner and place of articulation. Within the second stage, manner and place codes are integrated to recover the identity of the phoneme. We conclude that, despite the paucity of articulatory motor plans and speech production skills, pre-babbling infants are already equipped with a structured combinatorial code for speech analysis, which might account for the rapid pace of language acquisition during the first year.

<https://www.pnas.org/content/118/31/e2020410118.abstract>

COMMENTARIES

RICHARD G. KLEIN – Middle Stone Age marine resource exploitation at Ysterfontein 1 rockshelter, South Africa

Niespolo et al. report 230Th/238U “burial ages” for ostrich eggshell fragments from a 3.8-m-thick Middle Stone Age (MSA) sequence at Ysterfontein 1 shelter, west coast of South Africa. The ages are in expected stratigraphic order and imply that the entire 3.8-m sequence accumulated in as little as 2,300 y around 115,000 y ago.

<https://www.pnas.org/content/118/31/e2107978118>

ELIZABETH M. NIESPOLO et al – Reply to Klein: Ysterfontein 1 shell midden (South Africa) and the antiquity of coastal adaptation

Klein challenges two interpretations in Niespolo et al. Regarding his first point, we maintain that Ysterfontein 1 (YFT1) does provide the oldest known example of full coastal adaptation as indicated by the presence of shell middens (cf. ref. 3). Klein inaccurately characterizes the age of the deepest shell midden layers at Klasies River Main (KRM) given in ref. 4.

<https://www.pnas.org/content/118/31/e2108794118>

Royal Society Open Science

PAPERS

EITHNE KAVANAGH et mul with ZANNA CLAY, KARIM OUATTARA, JOAN B. SILK, RICHARD WRANGHAM, KLAUS ZUBERBÜHLER & KATIE SLOCOMBE – Dominance style is a key predictor of vocal use and evolution across nonhuman primates

Animal communication has long been thought to be subject to pressures and constraints associated with social relationships. However, our understanding of how the nature and quality of social relationships relates to the use and evolution of communication is limited by a lack of directly comparable methods across multiple levels of analysis. Here, we analysed observational data from 111 wild groups belonging to 26 non-human primate species, to test how vocal communication relates to dominance style (the strictness with which a dominance hierarchy is enforced, ranging from ‘despotic’ to ‘tolerant’). At the individual-level, we found that dominant individuals who were more tolerant vocalized at a higher rate than their despotic counterparts. This indicates that tolerance within a relationship may place pressure on the dominant partner to communicate more during social interactions. At the species-level, however, despotic species exhibited a larger repertoire of hierarchy-related vocalizations than their tolerant counterparts. Findings suggest primate signals are used and evolve in tandem with the nature of interactions that characterize individuals' social relationships.

<https://royalsocietypublishing.org/doi/full/10.1098/rsos.210873>

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